

**UNITED STATES DISTRICT COURT  
DISTRICT OF MASSACHUSETTS**

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DATATERN, INC.

Plaintiff

v.

BLAZENT, INC., MICROSTRATEGY INC.,  
CARL WARREN AND COMPANY  
INCORPORATED, LANCET SOFTWARE  
DEVELOPMENT, INC., AIRLINES  
REPORTING CORP., MAGIC SOFTWARE  
ENTERPRISES LTD., MAGIC SOFTWARE  
ENTERPRISES, INC., TERADATA  
CORPORATION, INFORMATICA  
CORPORATION, EPICOR SOFTWARE  
CORPORATION, and PREMIER, INC.

Defendants

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C.A. No. 11-cv-11970-FDS

(Consolidated)

**DATATERN'S OPPOSITION TO MICROSTRATEGY'S MOTION FOR SUMMARY  
JUDGMENT OF INVALIDITY FOR UNPATENTABLE SUBJECT MATTER**

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## INTRODUCTION

Patents that courts have invalidated under § 101 since *Bilski* and *Alice* have typically been directed to computerized methods for providing financial services, such as hedging risk in commodities transactions or insurance underwriting. What these cases all share in common is that the claimed method was something that had been performed for years in the pre-iPhone, pre-Google brick-and-mortar world and that the only supposed improvement was performing the method on a computer or over the Internet. That is, the patented method usually had some analog to an age-old business activity. United States Patent No. 6,101,502 (“the ‘502 patent”), however, is not that kind of patent. The claimed inventions solved a vexing problem in the computer field known as the “object-relational mismatch” and thus improved computer technology itself. Specifically, the claimed methods and systems facilitate access between object-oriented programs and relational databases. There was no analog in the brick-and-mortar world to the ‘502 patent because object-oriented programs and relational databases, let alone the object-relational mismatch, did not exist before computers. The problem addressed, and the solutions claimed, in the ‘502 patent, are strictly a function of computer science. The solution cannot be achieved on paper or in the mind. It must be implemented in the software to accomplish the result. Cases since *Bilski* and *Alice* have typically upheld patents that, like the ‘502 patent, are directed to technological solutions to technological problems.

## MATERIAL FACTS

### I. THE ‘502 PATENT SOLVED A VEXING PROBLEM IN THE INDUSTRY

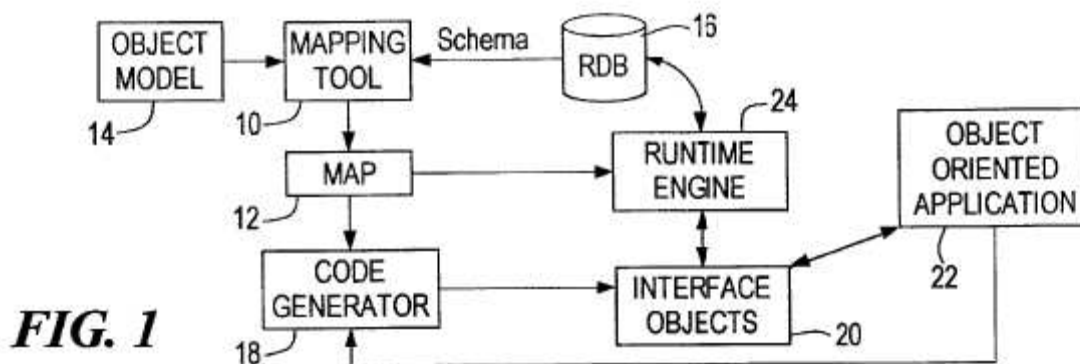
#### A. Overview

The ‘502 patent is directed to an improvement to computer science and database technology—specifically, it teaches methods and systems that allow object-oriented applications to access data in relational databases. The inability of object-oriented applications to interact

efficiently with relational databases had been a vexing problem in the software industry until the ‘502 patent taught how to use a novel programming tools for facilitating those interactions. Before the ‘502 patent, the process for coaxing object-oriented software applications to interface with relational databases was time consuming and fraught with human error. CSoF at ¶¶ 28-30.<sup>1</sup>

The ‘502 patent changed that. Indeed, the USPTO recognized the contribution of the ‘502 patent by *twice* confirming that it is novel and nonobvious over the prior art —once during the original examination and again during a reexamination. CSoF at ¶¶ 59-76.

The claimed inventions improve computing efficiency. To do so, the claimed inventions employ concrete mechanisms (not mental steps) including a “map,” “runtime engine,” and “interface objects.” Figure 1, reproduced below, illustrates these various mechanisms:



As seen in Figure 1, an object-oriented application can access data in a relational database (“RDB”) via a runtime engine and interface objects. These mechanisms could not exist on a pad of paper or in one’s head, as MicroStrategy suggests. CSoF at ¶¶ 41-54. Indeed, the

<sup>1</sup> All cited facts and evidence are detailed in the accompanying Responsive Statement of Facts (“RSoF”), which responds to MicroStrategy’s L.R. 56.1 Statement of Facts [Dkt. No. 51], and especially in the Counter-Statement of Facts (“CSoF”), which details additional facts supporting DataTern’s arguments. A number of the facts are based on the testimony contained in the accompanying declaration of DataTern’s technical expert, Geoff Cohen, Ph.D. (“Cohen Decl.”). Dr. Cohen is a computer scientist and opines on how a person of ordinary skill would view the ‘502 patent, the state of the art, and other issues relevant to the § 101 inquiry.



whole point of the patent is to provide systems and methods that allow object-oriented applications (running on computers) to access data residing in a relational database (*e.g.*, on a hard drive or server) within a computer system. *Id.* at ¶ 44. One cannot draw on a pad of paper the map or object model or runtime engine or interface object of the ‘502 patent and expect to connect the object-oriented application with the relational database. *Id.* at ¶ 54.

The ‘502 patent is not directed to a brick-and-mortar business method or age-old human activity implemented on a computer or over the Internet. CSoF at ¶¶ 49-50. Rather, the claimed processes and methods are intimately connected to machines because they concern how to make computer programs and databases perform better. CSoF at ¶ 46-50.

#### **B. The Problem of the Object-Relational Mismatch**

The traditional style of writing computer code is known as “structured” programming. Structured programming, however, suffers from certain problems, such as ease of development and maintenance. It was often difficult to change these complex “structured” software programs when new data or new functionality was introduced. Changes to one portion of the program could accidentally disrupt other portions of the program. CSoF at ¶¶ 4-8.

By the 1990s, however, object-oriented programming became popular in industry. Unlike the structured approach to programming, object-oriented programming uses “objects” that are relatively self-contained data structures that include data and may also include methods that operate on that data. CSoF at ¶¶ 9-12. In other words, in its broadest sense, an “object” is like a miniature, self-contained program. A number of objects can be strung together to form a complete program. Objects can thus be reused within a program or from program to program, saving coding, debugging, and development time. CSoF at ¶¶ 13-15.

At roughly the same time that programming was evolving from structured to object-oriented approaches, data storage methods were also evolving. By the 1990s, the most popular

form of computer database systems became the “relational database.” A relational database stores data in tables. Tables present rows of data organized in one or more columns, such as the way data is presented in a spreadsheet. The organization of rational databases makes operations like data searches more efficient and faster. CSoF at ¶¶ 17-20.

Object-oriented applications generally access data via a set of related objects. Relational databases, on the other hand, store data in rows and columns within one or more tables. Thus, the structural design of objects in an object-oriented program usually differs from the table structure of the relational database schema. CSoF at ¶¶ 25-26. This mismatch is known as the “object-relational mismatch.” *Id.* at ¶ 26.

Before the ‘502 patent, and due to the object-relational mismatch, for an object-oriented application to get data from, or persist (*i.e.*, store) data to a relational database, at least one of the object-oriented program or the relational database had to be customized for the other. CSoF at ¶ 28. The object-relational mismatch thus created a problem in the software industry because it required significant coding and customization in order to permit the object-oriented application to communicate with the relational database. *Id.* at ¶ 29.

As the ‘502 patent specification explains, this object-relational mismatch problem resulted in inefficiencies and errors:

The need for interfacing object oriented software applications with relational databases is well known. One method of interfacing an object oriented application with a relational database is to adapt the requests made by the application to the relational database. More particularly, object operations are translated into relational database queries. ***However, this technique is processor-intensive and sacrifices some of the advantages associated with the object oriented model. As a result, the object-oriented software application is unable to function efficiently.***

Another method of interfacing an object oriented application with a relational database is to translate database information into a format which is compatible with the object oriented application. Relational databases typically separate data

into a plurality of tables through a process known as “normalization” to minimize duplication. A normalized relational database includes a plurality of tables, wherein each table includes at least one field and one key, and at least one field in each table is uniquely dependent upon the key that is associated with the table. These tables can be translated into objects. *However, the objects can become inaccurate when changes are made to the relational database. It is known to adapt to changes in the database by performing further translations, but this process requires substantial effort.*

Exh. B, ‘502 patent, at 1:20-50 (emphasis added). See also CSoF at ¶ 31.

### C. The Inventive Concept of the ‘502 Patent

The ‘502 patent solves the problem of the object-relational mismatch by creating mechanisms, such as a runtime engine and interface objects, among other functionality, to allow the object-oriented application to interface with the relational database *without* the need for customizing one for the other and without the programmer or the database administrator to know details about the application or database:

The present invention provides transparent access to the relational database. The interface objects and runtime engine perform read and write operations on the database, including generation of SQL code. *Consequently, neither programmers nor software applications need have knowledge of the database structure, the database programming interface, database security, or the database transaction model in order to obtain access to the relational database.* Further, changes to the relational database do not always necessitate additional mapping.

Exh. B, ‘502 Patent, at 1:63-2:5 (emphasis added). See also CSoF at ¶ 38.

This invention further allows software developers to independently optimize the object oriented program and the relational database for their respective purposes without having to take into consideration how the changes to one will impact the other. CSoF at ¶ 39. By providing an intermediary between the object oriented application and the database, the database may be changed without requiring the application to be recoded, and vice versa, thus increasing computing efficiency. *Id.* at ¶ 40. Thus, the ‘502 patent claims inventions that advance computer science and database technology.

## II. PROSECUTION OF THE ‘502 PATENT CONFIRMS ITS VALIDITY

The ‘502 patent issued on August 8, 2000, from an application filed on September 25, 1998. Starting in January 2007, the patent was reexamined. The USPTO reconfirmed the patentability of all of the original claims (Claims 1-18) and allowed new claims (Claims 19-44). The reexamination certificate issued on November 10, 2009. See CSoF at ¶¶ 59, 63-64.

During both the original examination and the more recent reexamination, a point of distinction over the prior art was the use of a “runtime engine.” The patentee argued and the USPTO found that the runtime engine was a novel step that, when combined with the other claim elements, distinguished the closest prior art. CSoF at ¶ 66 and Exh. E at 2-3, Exh. F at 2, Exh. H at 15-22, Exh. I at 5.

For example, the primary basis for rejection of the claims during reexamination was the Chang prior art patent. CSoF at ¶ 68 and Exh. G at 6-10. The patent owner distinguished Chang as failing to teach a “runtime engine.” CSoF at ¶ 69; Exh. H at 15-23. The patentee then explained how the runtime engine and its use was novel:

Use of the runtime engine as a specific service serves to abstract the database access functionality from the object-oriented software application itself. The abstraction of the data access to a specific runtime engine *is an improvement offered by the claimed invention that significantly reduces the effort to create an application and, more importantly, to maintain an application in the face of changes in the database structure.* Further, the addition of “runtime engine” into the claim evinces the concept that the runtime engine is a specific service that supports the object-oriented software application, and not merely an environment in which the application operates.

CSoF at ¶ 70 and Exh. I at 5.

During both the original prosecution and during the reexamination, the patentee further distinguished the claims of the ‘502 patent from the prior art by arguing that “interface objects” were not disclosed in the prior art. CSoF at ¶ 71.

The Baker patent on which MicroStrategy relies was cited during the reexamination and provided to the examiner for consideration. Baker, however, does not disclose the “interface objects” claimed in the ‘502 patent. CSoF at ¶ 73.

During the USPTO’s original examination of the ‘502 patent, the patent examiner preliminarily rejected Claims 10-18 based on § 101:

8. Claims 10-18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. According to the Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. 7478 (1996), computer programs per se are not statutory subject matter. The Guidelines indicate that a claim to simply a “computer program” that does not define the invention in terms of specific steps to be performed on or using a computer should not be classified as a statutory process. Because claims 10-18 relate only to “routines” they are not seen to define specific steps to be performed and are therefore considered non-statutory.

CSoF at ¶ 74; Exh. D at 3. The inventors overcame this rejection, however, and the patent issued shortly thereafter. *See* CSoF at ¶ 75.

### **III. THE ‘502 PATENT CLAIMS INVENTIVE, UNCONVENTIONAL MECHANISM, NOT MENTAL STEPS**

The claimed inventions improve computer software technology by offering a solution to the object-relational mismatch. CSoF at ¶ 36. The solution is particular to the computer science field. Before there were computers, there was no reason to solve the problem because object-oriented applications and relational databases did not exist. *Id.* at ¶¶ 47-48. The invention does not improve a human activity or fundamental business practice but rather offers a new approach to the object-relational mismatch. The result of using the claimed methods or systems is a better result that avoids all of the nuisances previously caused by the object-relational mismatch. *Id.* at ¶¶ 44, 49-50, 57-58.

The claimed solution is not merely or primarily a mapping. Rather, there are several steps involved, including using a runtime engine and interface objects. CSoF at ¶ 51. Indeed, the invention is the use of an intermediary to mediate between the object-oriented program and database. The map does not do this. Rather, the runtime engine acting in concert with interface objects provides the access. The map is only part of the process. *Id.* at ¶¶ 38, 40, 51, 70.

It makes no sense to perform the steps mentally or with pencil and paper. For example, the process or system needs to read the map and object model to enable the next steps. One could not draw on paper or think about the map, object model, runtime engine, or interface object of the ‘502 patent and achieve the result. They are all needed by the computer system for the processes needed by an object-oriented application running on a computer system to, ultimately, store data in, or retrieve data from, a relational database. *Id.* at ¶¶ 52-54.

There are other ways to bridge the object-relational mismatch. The ‘502 patent details some prior art methods at 1:25-50. MicroStrategy itself admits that there are other ways to solve the problem. CSoF at ¶ 56 and RSoF at ¶ 31. The claims of the ‘502 patent, however, do not preempt all methods but rather require specific steps that were unconventional and innovative and that achieve better results. CSoF at ¶ 57.

## ARGUMENT

### I. THE ‘502 PATENT IS PRESUMED VALID

The ‘502 patent is presumed valid; thus, MicroStrategy has the burden of overcoming that presumption by clear and convincing evidence. 35 U.S.C. § 282; *Microsoft Corp. v. i4i Ltd. Partnership*, 131 S. Ct. 2238, 2244-53 (2011); *SSL Servs., LLC v. Citrix Sys., Inc.*, 769 F.3d 1073, 1090 (Fed. Cir. 2014); *Trading Techs. Int’l, Inc. v. CQG, Inc.*, No. 05-cv-4811, 2015 WL 774655, at \*3 (N.D. Ill. Feb. 24, 2015). Each claim is presumed valid independent of any other claim. *Cont’l. Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1266-67 (Fed. Cir. 1991).

The presumption of validity extends to every patentability requirement, including § 101. *Progressive Cas. Ins. Co. v. Safeco Ins. Co.*, No. 1:10 CV 1370, 2010 WL 4698576, \*4-5 (N.D. Ohio Nov. 12, 2010) (rejecting argument that the presumption does not apply to Section 101).

While the Section 101 inquiry is a question of law, it may also involve underlying questions of facts, such as whether a particular activity was routine or conventional and whether the claimed invention would preempt the field. *See, e.g., Ultramercial, Inc. v. Hulu, LLC*, 722 F.3d 1335, 1339 (Fed. Cir. 2013) (“the analysis under § 101, while ultimately a legal determination, is rife with underlying factual issues”), *cert. granted*, 134 S. Ct. 2870 (2014) (vacated on other grounds and remanded in light of *Alice*); *on remand*, 772 F.3d 709 (Fed. Cir. 2014); *see also, e.g., Accenture Global Servs., GmbH v. Guidewire Software, Inc.*, 728 F.3d 1336, 1340-41 (Fed. Cir. 2013) *cert. denied*, 134 S. Ct. 2871 (2014) (“Patent eligibility under § 101 presents an issue of law that we review *de novo*. . . . This legal conclusion may contain underlying factual issues”).<sup>2</sup> As seen in the accompanying RSoF and CSoF, DataTern has marshaled facts disputing MicroStrategy’s version of the case. On summary judgment, this Court must view these facts more favorably to the opposing party, DataTern, and draw all inferences in DataTern’s favor. *See Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255 (1986).

## II. THE TWO-PART TEST FOR PATENT ELIGIBILITY

### A. Claims Are Abstract if They Are Drawn to Age-Old Commercial Practices

In *Alice*, the Supreme Court held that patent claims directed to a computerized scheme for mitigating “settlement risk” in financial transactions were ineligible under 35 U.S.C. § 101. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2354-60 (2014). The *Alice* claims “involve a method of exchanging financial obligations between two parties using a third party

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<sup>2</sup> As explained in the Supreme Court’s recent decision in *Teva Pharma. USA, Inc. v. Sandoz, Inc.*, even determinations traditionally deemed “questions of law,” such as claim construction, may involve underlying factual disputes. 135 S.Ct. 831, 840 (2015).

intermediary to mitigate settlement risk.” *Id.* at 2356. To determine whether such claims were patent eligible, the Court applied the following two-part test:

- (1) determine whether the challenged claims are directed to a patent-ineligible concept (*i.e.*, laws of nature, natural phenomena, and abstract ideas);
- (2) determine whether the claim recites an “inventive concept” that transforms the abstract idea into something that is patentable.

*Id.* at 2355-57.<sup>3</sup> The Court declined to define what is meant by an “abstract idea” other than to liken the claims to the claims from the *Bilski* patent:

In any event, we need not labor to delimit the precise contours of the “abstract ideas” category in this case. It is enough to recognize that there is no meaningful distinction between the concept of risk hedging in *Bilski* and the concept of intermediated settlement at issue here. Both are squarely within the realm of “abstract ideas” as we have used that term.

*Id.* at 2357. In effect, the Court said that a reliable way to determine whether a claim is drawn to an abstract idea is to compare it to the claims from *Bilski*, which were abstract.<sup>4</sup>

Although this definition of “abstract idea” appears to be a “I know it when I see it” test, a closer reading reveals that a key inquiry is to determine whether the claimed method had an analog in the brick-and-mortar world. In comparing the *Alice* and *Bilski* patent claims, the Court found that their common denominator was that they could be reduced to “fundamental economic practice[s] long prevalent in our system of commerce.” 134 S. Ct. at 2356, *citing Bilski*, 561 U.S. at 611. *See also, e.g., California Inst. of Tech. (“Caltech”) v. Hughes Comm’ns Inc.*, No. 2:13-cv-07245, 2014 WL 5661290, at \*13 (C.D. Cal. Nov. 3, 2014) (“a claim is more likely to be

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<sup>3</sup> The *Alice* court did not invent this two-part test but rather adopted it from *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1296-98 (2012) (“*Prometheus*”). Thus, *Alice* did not create new law. Rather, *Alice* merely confirms the Court’s prior analytical framework.

<sup>4</sup> In *Bilski*, the Court held that methods for hedging risk in commodities transactions are abstract. *Bilski v. Kappos*, 561 U.S. 593 (2010). Similarly, in the other Supreme Court case on § 101, *Prometheus*, the Court found the methods for determining metabolite levels were “well known in the art” and thus ineligible. *Prometheus*, 132 S. Ct. at 1297-98.



abstract if it stands for a fundamental practice with a long history, like the method in *Bilski* for hedging risk”).

Even if a claim were drawn to an abstract idea, it can still be eligible under § 101 if it adds something more, namely an “inventive concept” that transforms the abstract into the concrete. *Alice*, 134 S. Ct. at 2355; *Caltech*, 2014 WL 5661290 at \*13 (“§ 101 does not preclude a claim directed to a longstanding practice that adds something more”). In *Alice*, the Court found that the only alleged improvement in the claimed methods was to implement the abstract idea on general-purpose computers. But “the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention.” 134 S. Ct. at 2358.

In keeping with *Alice*, the Federal Circuit and district courts have most typically invalidated claimed methods that merely use a generic computer or the Internet to implement long-standing commercial practices that were previously performed in the brick-and-mortar world. *See, e.g., Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 715-16 (Fed. Cir. 2014) (offering media content in exchange for viewing an advertisement); *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350, 1355 (Fed. Cir. 2014) (creating a “transaction performance guaranty” in financial transactions); *Planet Bingo, LLC v. VKGS LLC*, 576 F. App’x 1005, 1006 (Fed. Cir. 2014) (managing the game of bingo); *Mortgage Grader, Inc. v. Costco Wholesale Corp.*, Case No. SACV 13-00043, 2015 WL 778125, at \*5-6 (C.D. Cal. Jan. 12, 2015) (methods for submitting and evaluating loan applications); *Carfax, Inc. v. Red Mountain Techs.*, Case No. 1:14-cv-01590 (E.D. Va. Mar. 30, 2015) (underwriting an insurance policy).

## **B. Improvements to Computer Technology Are Patentable**

In *Bilski*, the Supreme Court emphasized that advances to computer programming and related technologies can and do constitute patentable subject matter:

It is true that patents for inventions that did not satisfy the machine-or-transformation test were rarely granted in earlier eras, especially in the Industrial Age, as explained by Judge Dyk’s thoughtful historical review. See 545 F.3d at 966-976 (concurring opinion). ***But times change.*** Technology and other innovations progress in unexpected ways. For example, it was once forcefully argued that until recent times, “well-established principles of patent law probably would have prevented the issuance of a valid patent on almost any conceivable computer program.” *Diehr*, 450 U.S., at 195, 101 S.Ct. 1048 (STEVENS, J., dissenting). ***But this fact does not mean that unforeseen innovations such as computer programs are always unpatentable.*** See *id.*, at 192-193, 101 S.Ct. 1048 (majority opinion) (holding a procedure for molding rubber that included a computer program is within patentable subject matter). Section 101 is a “dynamic provision designed to encompass new and unforeseen inventions.” *J. E. M. Ag Supply, Inc. v. Pioneer Hi-Bred Int’l, Inc.*, 534 U.S. 124, 135, 122 S.Ct. 593, 151 L.Ed.2d 508 (2001). ***A categorical rule denying patent protection for “inventions in areas not contemplated by Congress . . . would frustrate the purposes of the patent law.”*** *Chakrabarty*, 447 U.S., at 315, 100 S. Ct. 2204.

561 U.S. at 605 (emphasis added). In *Alice*, the Court suggested that software-related claims could be patent eligible when, for example, they “improve the functioning of the computer itself” or improve “any other technology.” *Alice*, 134 S. Ct. at 2359; see also *Caltech*, 2014 WL 5661290 at \*6-11 (reviewing *Alice*, surveying the post-*Alice* case law, and interpreting Congressional intent to conclude that software remains patentable after *Alice*).

Shortly after *Alice*, Federal Circuit Judge Mayer observed that the Supreme Court is really applying a “technological arts” test for patent eligibility. *I/P Engine, Inc. v. AOL Inc.*, 576 Fed. Appx. 982, 992 (Fed. Cir. 2014) (Mayer, J., concurring). Under this test, the “inventive concept *itself* must be new technology, a novel application of scientific principles and natural laws to solve problems once thought intractable.” *Id.* at 993 (emphasis in original). In other words, according to Judge Mayer, “abstract ideas untethered to any significant advance in science and technology are ineligible for patent protection.” *Id.* at 992. To overcome this deficit, the claimed invention must “improve the functioning of the computer itself” or “effect an

improvement in any other technology or technical field.” *Id.*, quoting *Alice*, 134 S. Ct. at 2359.<sup>5</sup>

While *Alice* did not actually adopt a technological arts test, it can be, like the old “machine-or-transformation” test, a good proxy or clue for determining whether a claim is more likely to be patent eligible.<sup>6</sup> Indeed, since *Alice*, the Federal Circuit, district courts, and the USPTO have confirmed the Section 101 patentability of software-related inventions. In these cases, the tribunals found that the claims were not abstract or, if abstract, recited an inventive concept that transformed the abstract idea into something more. In all of these cases, the saving grace was that the claimed methods and systems were not simply fundamental, brick-and-mortar economic practices performed on generic computers but were instead improvements to existing computer and software technology or some other technology.

Accordingly, in the following cases, the courts and USPTO denied motions (on the pleadings and on summary judgment) seeking to invalidate software-related patent claims under § 101. *See, e.g., DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1255-59 (Fed. Cir. 2014) (systems and methods of automatically generating a composite web page that combines elements of multiple source websites); *Modern Telecom Sys. LLC v. Juno Online Servs., Inc.*,

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<sup>5</sup> In distinguishing *Diamond v. Diehr*, 450 U.S. 175 (1981), which found a claim directed to a computer-implemented process for curing rubber to be valid, the *Alice* court noted that the claim at issue in *Diehr* was “a process designed to solve a **technological problem** in ‘conventional industry practice.’” 134 S.Ct. at 2358 (citing *Diehr*, 450 U.S. at 177) (emphasis added).

<sup>6</sup> In *Bilski*, the Court held that the “machine-or-transformation” test “is a useful and important clue, an investigative tool,” for helping to determine Section 101 eligibility. *Bilski*, 130 S. Ct. at 3227. In the same way, the technological arts test can be a good clue to eligibility. Indeed, since *Alice*, courts have appeared to use this technological arts test, or some variation of it, as part of their Section 101 analysis. *See, e.g., Caltech*, 2014 WL 5661290, at \*20 (“[P]atents should encourage inventors to create new computing solutions to today’s computing problems. Caltech’s patents improve a computer’s functionality by applying concepts unique to computing ... to solve a problem unique to computing”); *Smartflash*, 2015 WL 661174, at \*8 (“Entry into the Internet Era presented new and unique problems for digital content providers ... Piracy of digital content became widespread through means unknown to the pre-Internet world. The patents claims methods and systems designed to prevent such [piracy]”).

No. CV 14-0348, 2015 WL 1240182, at \*9 (C.D. Cal. Mar. 17, 2015) (methods for improving performance of computer modems and data transmission); *France Telecom S.A., v. Marvell Semiconductor Inc.*, No. 12-cv-04967, 2015 WL 925892, at \*11 (N.D. Cal. Mar. 2, 2015) (method for error-correction coding of source digital data elements, which improve effectiveness and efficiency in addressing noise in data transmissions); *Intellectual Ventures I, LLC v. Motorola Mobility LLC*, Civ. No. 11-908, 2015 WL 846532, at \*10 (D. Del. Feb. 24, 2015) (methods for allocating wireless bandwidth based on packet contents, improving upon prior art “circuit-centric” architecture by, e.g., adapting to changing network load, congestion and error rates); *Trading Techs.*, 2015 WL 774655 at \*4 (“The claims of the patents also do not address a challenge in business. Rather, the claims at issue in both patents profess to solve problems of prior graphical user interface devices (GUIs), in the context of computerized trading, relating to speed, accuracy and usability”); *Smartflash LLC v. Apple Inc.*, Nos. 6:13cv447 and 6:13cv448, 2015 WL 661174, at \*8-9 (E.D. Tex. Feb. 13, 2015) (denying summary judgment of invalidity under § 101 of claims directed to data storage and access systems that address the problem of piracy of digital content); *Fairfield Indus., Inc. v. Wireless Seismic, Inc.*, No. 4:14-CV-2972, 2014 WL 7342525, at \*5-6 (S.D. Tex. Dec. 23, 2014) (methods of seismic data acquisition that avoid jumbled communications and offer greater reliability); *Caltech*, 2014 WL 5661290, at \*15-20 (error correction coding and decoding software that improves data transmission by reducing data corruption due to noise); *Helios Software, LLC v. SpectorSoft Corp.*, No. 12-081, 2014 WL 4796111, at \*17 (D. Del. Sept. 18, 2014) (patents “drawn to remotely monitoring data associated with an Internet session and controlling network access”); *see also Ex Parte Bush*, Appeal 2013-001110, 2015 WL 996303, \*2 (Patent Tr. & App. Bd. Feb. 27, 2015) (reversing rejection of claims under Section 101 because the claimed method is “inextricabl[y] tied with a computer

based communication and notification scheme interconnecting computers so as to combine one or more accounts into a single account using computer associated nodes”).

In *DDR Holdings*, the Federal Circuit distinguished the claims at issue from those that merely recite the performance of a brick-and-mortar business practice performed on the Internet. To the court, the key to patent eligibility was that the “***claimed solution is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks.***” 773 F.3d at 1257 (emphasis added). The court found that the claimed invention had no analog in the brick-and-mortar world and that the problem to be solved “is a challenge particular to the Internet.” *Id.* at 1257-58<sup>7</sup>

After *Alice*, the USPTO released examples of abstract and patentable software-related claims to serve as guidance for patent examiners when examining patent applications. *See USPTO Guidance on Subject Matter Eligibility/Examples of Abstract Ideas* (available at <http://www.uspto.gov/patent/laws-and-regulations/examination-policy/2014-interim-guidance-subject-matter-eligibility-0>). In these guidelines, the USPTO offered exemplary claims to illustrate the difference between patent eligible and ineligible subject matter. The USPTO’s exemplary patent *eligible* claims—like the claims of the ‘502 patent—are directed to subject matter inextricably tied to and/or improving existing computer technology. *Id.* at 3-13. For

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<sup>7</sup> The post-*Alice* cases cited above are also consistent with older cases in which the courts held that patents directed to “functional and palpable applications in the field of computer technology” or “specific applications or improvements to technologies in the marketplace” are “not likely to be so abstract that they override the statutory language and framework of the Patent Act.” *Research Corp. Techs., Inc. (“RCT”) v. Microsoft Corp.*, 627 F.3d 859, 868-69 (Fed. Cir. 2010). *See also, e.g., Island Intellectual Prop. LLC v. Deutsche Bank AG*, No. 09 Civ. 2675, 2012 WL 386282, at \*7 (S.D.N.Y. Feb. 6, 2012); *Nazomi Comm’ns, Inc. v. Samsung Telecom. Inc.*, No. C-10-05545, 2012 WL 967968, \*1 (N.D. Cal. Mar. 21, 2012); *Advanced Software Design Corp. v. Fiserv, Inc.*, No. 4:07-cv-185, 2012 WL 1684495, at \*5 (E.D. Mo. May 15, 2012); *Prompt Med. Sys. v. Allscriptsmyasis Healthcare Sols., Inc.*, No. 6:10-cv-71, 2012 WL 678216 (E.D. Tex. Feb. 13, 2012).

example, a hypothetical claim “directed towards physically isolating a received communication on a memory sector and extracting malicious code from that communication to create a sanitized communication in a new data file” would not be abstract and would instead be patent eligible under § 101 because the claim improves computer technology:

Such action does not describe an abstract concept, or a concept similar to those found by the courts to be abstract, such as a fundamental economic practice, a method of organizing human activity, an idea itself (standing alone), or a mathematical relationship. In contrast, the invention claimed here is directed towards performing isolation and eradication of computer viruses, worms, and other malicious code, *a concept inextricably linked to computer technology*...

*Id.* at 3 (emphasis added). *See also id.* at 8-9 (Example 3—reciting a series of acts for generating a blue noise mask and using that blue noise mask to halftone a gray scale—is, “[u]nlike the invention in *Alice Corp.*[,] ... not merely limiting the abstract idea to a computer environment by simply performing the idea via a computer ... but rather is an *innovation in computer technology*”) (emphasis added).

By contrast, the USPTO identifies ineligible subject matter as, for example, a claim that “recites the steps of creating a contract, including receiving a request for a performance guaranty (contract), processing the request by underwriting to provide a performance guaranty and offering the performance guaranty.” *Id.* at 17, *citing buySafe*, 765 F.3d 1350. The USPTO explains that such a claim “describes the creation of a contractual relationship,” *i.e.*, an abstract idea, and that narrowing the commercial transaction to, for example, underwriting, does not make the claim less abstract. *Id.* The claims of the ‘502 patent are nothing like that.

### **III. THE ‘502 PATENT CLAIMS ARE NOT ABSTRACT BUT ARE INVENTIVE**

#### **A. The ‘502 Patent Is Not Drawn to an Abstract Idea**

As an initial matter, the claims of the ‘502 patent are not directed to a fundamental economic practice (such as hedging risk or insurance underwriting) or to some other age-old

human activity (like bingo games). Neither are the claims directed to methods that merely perform a brick-and-mortar practice via computer. MicroStrategy has not argued otherwise. Rather, the claims are drawn to an improvement of computer technology itself and involve improvements to software and database technology. CSoF at ¶¶ 36-41, 70, 83. As such, the claims are unlike those in *Alice*, *Bilski*, and *CyberSource*,<sup>8</sup>

Instead, the claims solve a problem in computer and database technology, namely, the object-relational mismatch. That is a problem that is unique to compute and database technology and had no analog in the brick-and-mortar world. CSoF at ¶¶ 22-31, 36, 44, 46-50. Accordingly, the claims are more like those in the *DDR Holdings* line of cases collected above in that the claimed solution to the object-relational mismatch “is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer [technology].” *DDR Holdings*, 773 F.3d at 1257 (emphasis added).

#### **B. The Claimed Steps Are Not Mental Steps**

Nor are the claims merely a collection of mental steps, as MicroStrategy argues. Indeed, in the context of the ‘502 patent, it would be improper to argue that “generating a map,” “selecting an object model,” etc., are purely mental or pencil and paper steps:

The Court finds this mode of analysis unhelpful for computer inventions. Many inventions could be theorized with pencil and paper, but pencil and paper can rarely produce the actual effect of the invention. Likewise, with regard to software, a human could spend months or years writing on paper the 1s and 0s comprising a computer program and applying the same algorithms as the program. At the end of the effort, he would be left with a lot of paper that obviously would not produce the same result as the software.

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<sup>8</sup> MicroStrategy relies extensively on *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366 (Fed. Cir. 2011). *CyberSource* is distinguishable, however, because the patent in that case did not create mechanisms for solving a problem in computer science but rather involved an age-old business practice, namely, validating credit transactions. The only relation to computers was that the validation could be performed faster with generic computers.

The problems of pencil-and-paper analysis are heightened in the context of software, which necessarily uses algorithms to achieve its goals. Pencil-and-paper analysis can mislead courts into ignoring a key fact: although a computer performs the same math as a human, a human cannot always achieve the same results as a computer.

*Caltech*, 2014 WL 5661290, at \*16.

While a human being could, theoretically, think of a map or draw one on paper, this mental map would not serve the purpose of the claimed methods and systems. While a human being could, theoretically, think of an object model, this mental object model likewise would not serve the purpose of the invention. Rather, the runtime engine, interface object, etc., are specific features that must exist within the computer system so that the system can use these elements in the process of persisting data to, or retrieving data from, the database (which is hosted on a computer or server). CSoF at ¶¶ 44 .<sup>9</sup>

### **C. The Recited Steps Are Inventive, Not Conventional or Routine**

Even were the Court to determine that the claims of the ‘502 patent are directed to an abstract idea, which DataTern disputes, that would not be the end of the analysis. Under the second prong of the *Alice* two-part test, the Court must still consider whether the claims recite an inventive concept that transforms the abstract idea into something more.

Here, that “something more,” that “inventive concept,” is satisfied. The recited method steps and system components, particularly the use of the runtime engine and interface objects, are inventive, unconventional, and anything but routine. Indeed, the patentee distinguished the prior art on the basis of these features. CSoF at ¶¶ 61, 66-76. By the same token, Baker does not disclose interface objects and thus it cannot be said that interface objects are conventional or

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<sup>9</sup> Even if a particular step of a claim in the ‘502 patent could be performed in one’s head, the claim *as a whole* is directed to tangible physical structures, or tools, allowing object oriented applications to communicate with relational databases. *See Bilski*, 561 U.S. at 611 (noting that the court must “consider the invention as a whole”) (quoting *Diehr*, 450 U.S. 188)



routine. CSoF at ¶¶ 72-73.<sup>10</sup> The unconventional and significant runtime engine and interface objects must therefore be given exceptional weight in the § 101 analysis. *See, e.g., In re Lowry*, 32 F.3d 1579, 1583 (Fed. Cir. 1994) (“attribute data objects” were not mere data structures but imparted patentable weight to claims – “the data structures provide increased computing efficiency”); *Ex parte Chen*, 2012 Pat. App. LEXIS 336 (BPAI Jan. 26, 2012) (claims involving “business objects” and a “data engine,” used to translate business objects into data entries in a database are patentable).

In particular, the core of the invention is not a mapping, as MicroStrategy argues. It is far too simplistic, and indeed, myopic, to characterize the invention in this way or to reduce the invention to one limitation out of the many in the claims. Indeed, as this Court made clear, each claim must be considered as a whole. *Sandborn v. Avid Tech., Inc.*, No. 11-cv-11472-FDS, 2013 WL 4784265, at \*3 (D. Mass. Sept. 5, 2013).

Far from merely claiming a mapping, the ‘502 patent claims the use of an intermediary to translate between the object-oriented application and relational database. The intermediary consists of, *inter alia*, the runtime engine acting with the interface objects. There are several advantages of this approach, including that the application need not be customized for the database, or *vice versa*, and that it removes from the application the burden of knowing how to access the database. CSoF at ¶¶ 30, 38, 51, 58.

The runtime engine and interface objects can neither exist in one’s mind nor on paper. Nor can they be considered insignificant post-solution activity. Rather, they are the key

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<sup>10</sup> By introducing Baker, MicroStrategy is, in effect, relying on a point-of-novelty test. But, “[d]espite its convenience, courts should not apply the point-of-novelty approach when examining claims under § 101” *Caltech*, 2014 WL 5661290, at \*11. Indeed, “[i]t is inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis.” *Diehr*, 450 U.S. at 188. A new combination of steps in a process may be patentable even if the constituent elements are well known. *Id.*

mechanisms for reading and writing data from the database. CSoF at ¶¶ 51-52. MicroStrategy has offered no evidence, such as expert opinion, to the contrary.

Finally, it is worth noting that when the patent was originally examined, the examiner considered eligibility under § 101. The examiner challenged the system claims, Claims 10-18, but not the method claims (Claims 1-9), apparently considering them to be patent eligible. After some amendments, the system claims were approved. CSoF at ¶¶ 74-76. When, as here, the USPTO has already considered the validity challenge at issue, then the presumption of validity is that much harder to overcome. *See, e.g., VLT Corp. v. Unitrode Corp.*, 130 F. Supp. 2d 178, 192 (D. Mass. 2001); *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1359 (Fed. Cir. 2007).

### CONCLUSION

For the foregoing reasons, DataTern respectfully requests that this Court deny MicroStrategy's motion for summary judgment regarding invalidity under 35 U.S.C. § 101.

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April 16, 2015

**CERTIFICATE OF SERVICE**

I, Erik Paul Belt, certify that on this 16th day of April, 2015, the within document was electronically filed with the Clerk of the Court using the CM/ECF system and will be sent electronically to the registered participants as identified on the Notice of Electronic Filing (NEF), pursuant to Local Rule 5.4(C).

/s/ Erik Paul Belt  
Erik Paul Belt